NOTES.

THE death is announced of Prof. Rudolph Weber, Berlin, at the age of sixty-five, and of Prof. M. P. J. Rollet, of Lyons Observatory, a correspondent in the Médecine et Chirurgie Section of the Paris Academy of Sciences.

THE University of Halle, on the occasion of the recent bicentenary celebrations, conferred the honorary degree of Ph.D. upon Prof. Victor Horsley, F.R.S.; Mr. F. G. Kenyon and Mr. H. L. D. Ward, both of the British Museum; Mr. G. A. Grierson, and Prof. W. W. Skeat.

A REUTER telegram reports that Mr. Aagaard, the United States Consular Agent at Tromsö, has despatched Captain Bottolfsen on board the fast-sailing cutter *Malygen* to Spitzbergen with a supply of provisions and clothing for the Wellman Expedition, for which the *Malygen* will search, and which, if possible, it will take back to Tromsö.

THE President of the Photographic Society of Great Britain has received a communication from the Secretary of State to the effect that the Queen has given her consent to the proposal to call the Society "The Royal Photographic Society of Great Britain."

HERR OTTO LILLENTHAL, whose aërial excursions were described in these columns a short time ago, recently met with a serious accident. The wings of his flying machine collapsed while he was at an altitude of about two hundred feet, causing him to fall to the ground. His fall was broken to some extent, but he was badly injured.

AN earthquake disturbance is reported to have occurred at Aci Reale, Sicily, shortly before six o'clock on the morning of August 8. Great damage was done at Zafarana, where six persons were killed and several injured. Both there and at Aci San Antonio, nearly all the houses have fallen in. Slight shocks were felt in Catania and several other communes in the neighbourhood of Mount Etna, but no damage was done.

THE *Times* correspondent at Calcutta, writing on August 12, reports that the Gohna Lake rose 24 ft. 6 in. last week, and is now within 57 ft. of the top of the dam. Its full length is now 4½ miles, the average width being half a mile. The greatest depth is 720 ft. The percolation is very heavy. This, combined with heavy rain, has washed away a large portion of the lower part of the dam, leaving an almost perpendicular drop of 400 ft. The section thus displayed shows a layer of boulders on the top, below which is pulverised rock. The lake is expected to overflow within fifteen days.

WE learn that the arrangements have now been completed for the fourteenth congress and exhibition of the Sanitary Institute, to be held in Liverpool near the end of next month. On Monday, September 24, the Lord Mayor of Liverpool will receive members at the Town-hall, and the President, Sir F. S. Powell, M.P., will deliver the inaugural address in the large theatre of University College; while in the evening the Lord Mayor will formally open the exhibition. Next day there will be conferences in University College on a variety of subjects. In the conference on "Domestic Hygiene," the Lady Mayoress will preside, and the ladies will afterwards hold a reception. At night Dr. G. B. Longstaff lectures at University College. On September 26, Section I., "Sanitary Science and Preventive Medicine," meet under the presidency of Dr. Klein, in the college, and the discussion will be continued next day. The Lord Mayor gives a reception in the Walker Art Gallery on Wednesday evening. Section II., "Engineering and Architecture," meets on Thursday, and the discussions will be continued on the following day, when also Section III., "Chemistry, Meteorology, and Geology," meet under the presidency of Dr. T. Stevenson. The closing general meeting of the congress takes place in the college on Friday evening, September 28, and later, Sir James Crichton Browne will address the working classes in the Picton Lecture-hall. The exhibition will remain open three weeks.

THE tenth meeting of the International Congress of Americanists was held at Stockholm, August 3-8, and was attended by the President, Dr. Rudolph Virchow, Baron Nordenskiöld, Mrs. Zelia Nuttall (of Dresden), M. Charnay, and Dr. Robert Munro, among others. Prof. Gustav Retzius, M. E. W. Dahlgren, and M. O. Montelius were some of the members of an influential executive committee, of which M. Carl Bovallius acted as general secretary. H.M. the King of Sweden, with S.A. the Crown Prince, attended the morning sitting on August 6, and heard the following communications read:—"Recent Finds from South American Tombs," by Dr. R. Virchow; "The Cliff Dwellers," by M. Charnay; and "Remarks on the Calendar System of the Ancient Mexicans," by Mrs. Zelia Nuttall. This lady paid a graceful tribute to the memory of that ardent "Americanist," the late Mrs. Hemmenway, of Boston, whose death was a sad loss to the cause of American archæology, and gave a summary in French of the chief results of her own investigations on the calendar system of the ancient Mexicans. Her paper on this subject was printed in English for distribution among the members of the Congress. The same evening the King gave a *fête* to the members of the Congress at the Palace of Drottningholm, and proposed the toast of "The Americanist Congress" at supper, to which Dr. Virchow suitably replied.

THE letter on a recent change in the character of April, which appeared in our issue of July 12, has led Dr. O. Z. Bianco to examine the meteorological statistics of Turin for evidence of a similar variation. By tabulating the values of the mean temperature in April at that place since 1865, and smoothing them in averages of five, he finds that, in the thirty years considered, the lowest average temperature occurred in 1889 at Turin as well as at Greenwich. The temperature appears to have gradually fallen to this minimum since 1865, and is now rising. If the results of observations are represented diagrammatically, a figure is obtained which agrees very closely with that accompanying the letter to which we have referred. Taking simply the monthly mean temperature in different years, the lowest values belong to 1879 and 1891, and are 10°·1 C. and 10°·2 C. respectively. For Greenwich the corresponding point was a temperature of 43·5° F. (6°·4 C.) in 1879 and 1888. In the latter year the mean temperature of April in Turin was 10°·8 C., which is nearly a degree below the normal value. Further inquiry may perhaps lead to an explanation of the change to which attention has been directed.

WE have received the first four numbers of a series of Electrical Engineering Leaflets by Prof. E. J. Houston and Mr. A. E. Kennelly, which are being issued in weekly parts. These leaflets are divided into three grades: elementary, which is suited for the use of electrical artisans, wiremen, and elementary students; intermediate, suited to students in technical schools; and advanced, suited to students taking a course in electrical engineering. Although, to judge from the four first numbers, these leaflets will be hardly suitable to form by themselves a complete text-book in this subject, since the points treated are of too wide a scope to admit of sufficient detail and explanation being given in the moderate size of the work (some 300 pages small octavo) to ensure a student, without some other source of information, being able to grasp the subject. They will, however, be found very useful as a book of reference, and for revising and keeping fresh information which has already been acquired, forming as they do a compact and clearly expressed synopsis of the subject. Another useful feature in the numbers under consideration are tables of physical quantities, such as the electromotive force of different cells, specific resistance of solids and liquids, the temperature coefficient being in most cases given as well as the temperature at which the value of the resistance given is measured, together with the observer's name. An elaborate scheme of prefixes used to denote multiples and submultiples of the different units is given, which, as long as the scheme is printed on the opposite page to the table in which these prefixes are used, saves a good deal of space, but will probably cause a great deal of unnecessary confusion if they are used in other parts of the work, unless the value is in every case also given in the index notation.

IN a short communication, made to the French Academy of Science, M. Moureaux says that on examining the magnetograph records of the Parc Saint-Maur Observatory for the night of July 11–12, he finds a disturbance which corresponds in time with the earthquake shock that caused so much destruction at Constantinople. As M. Moureaux has taken the precaution to have non-magnetic copper bars suspended alongside the magnetograph needles, and the records from these bars show no disturbance, it is evident that the effects observed were due to magnetic causes, and not to a mechanical shock. As the magnetic disturbance occurred sixteen minutes before the time at which the earthquake shock was felt at Constantinople, and since the two places are separated by a distance of 3000 kilometres, it would appear that the disturbance travelled at the rate of only three kilometres per second. This is certainly a very slow rate of propagation, and it would be of great interest if the observers at other observatories where a permanent magnetic record is kept, were to examine their curves, and see whether they show a similar disturbance, and if so, if the rate of propagation is about the same as the above. If the values obtained vary much, it is probable that the disturbance noted by M. Moureaux was of solar rather than of terrestrial origin, or at any rate was not connected with the earthquake at Constantinople.

ANYTHING respecting Corea is of special interest at the present time, and the short article on the "Cultivation of Cotton" in that little-known country, which a recent number of the *Journal of the Society of Arts* contains, is certain to have many readers. According to this article, which is based upon a report of the Commissioner of Corean Customs at Fusan, the total area under the cultivation of cotton in Corea is roughly computed to be 872,000 acres, the yield of seed cotton from which per annum is put at 1,200,000,000 lbs. The yearly consumption of "cleaned" or raw cotton is estimated at 300,000,000 lbs. The Corean fibre is reported to be superior to that produced in Japan. The method of cultivation is as follows:—The ground is usually ploughed up during the early winter, and allowed to remain in this condition until the frost is well out of it, when it is broken up with a hoe, and manure, mixed with wood ashes, spread over it. The fields are now ready for the reception of the seed, which is generally sown about April to May. The seed, of which there is but one kind, is not placed in drills, as is done in Japan, but is sown broadcast, and then trodden in and covered up with the feet, sesamum seed being very often sown in the same field with it. The young shoot shows above ground about the tenth day, and at maturity attains a height of from 2 feet to 2½ feet. The plant blossoms in August, and on an average bears forty pods, each containing four cells, as a rule within a double capsule. The gathering of the crop, which begins about October, continues until frosts set in, some time in November. No attention is paid or skill displayed in the cultivation once the seed is in the ground; everything is then left to nature. No further manure is added, nor are they ever thinned out or given water in times of drought. The crops are principally gathered by women, who also are largely employed afterwards in separating the seed.

DURING the last few years, alloys of tin and lead have been employed in manufactures in which the constancy of melting points after successive meltings played an important part. Rudberg, one of the earliest workers in this field, noticed that the thermometer stopped at two points during the solidification of these alloys; the higher point varied with their composition, while the lower was constant, being about 187°, and was identical with the melting point of the "chemical alloy" represented by the formula $PbSn_3$. In the current number of *Wiedemann's Annalen*, Bernhard Wiesengrund gives the results of a complete series of experiments with tin-lead alloys ranging from $PbSn_{12}$ to $Pb_{12}Sn$. They were melted in a crucible of sheet iron covered with a lid provided with two brass tubes to admit and withdraw dry hydrogen during heating. An iron tube closed at the bottom was attached to the lid. It dipped into the alloy, and served to contain the thermometer, the bulb of which was surrounded by mercury. The thermometer was graduated from 0° to 360° C., and contained nitrogen above the mercury column. The crucible was surrounded by a sheet-iron water-jacket kept at 150° C., and the heating was done by means of a triple Bunsen burner. As regards the densities of the alloys, it was found that they were all lighter than might have been expected from the densities of their constituents. This increase of volume was greatest in the case of the "chemical alloy" $PbSn_3$, and decreased as one or the other constituent preponderated. The process of solidification showed Rudberg's two points distinctly. The higher one, called the melting point, was really a point at which the cooling became somewhat less rapid. The lower, called the point of solidification, was a truly stationary point, except in the alloys containing much lead. The most regular curve of cooling is shown by the alloy $PbSn_3$. At about 178° there is a dead stop lasting for seven minutes, not preceded by a perceptible stop at the melting point. The latter becomes more pronounced as the percentage of tin increases, and appears as a point of inflexion in the alloy $PbSn_{12}$. As the lead is increased, the melting point rises, the point of solidification falls slightly and becomes less pronounced, and all breaks in the curve of cooling tend to disappear. The author gives a plausible explanation of the phenomena analogous to the theory of saline solutions, tin being regarded as the solvent. After twenty-four successive remeltings a mechanical rearrangement was observed, producing a slight elevation of the fusing point and an approximation of the point of solidification to that of the "chemical alloy." This was due to the excess of the heavy lead, or the light tin gradually separating out from the alloy $PbSn_3$.

THE *Transactions and Proceedings* of the New Zealand Institute (vol. xxvi.), containing papers read before the Institute during 1893, has been published, and is obtainable from Messrs. Trübner and Co.

THE *Quarterly Journal* of the Geological Society (No. 199, August) has been issued. It contains five plates, illustrating papers by Mr. A. Harker, Mr. W. W. Watts, Mr. Frank Rutley, and Sir J. W. Dawson and Dr. W. Hind.

THE August number of the *Journal* of the Royal Microscopical Society is almost entirely taken up with summaries of current researches. The only two papers are by Mr. F. Chapman and Mr. T. Comber, the former dealing with the foraminifera of the gault of Folkestone, and the latter with the characters generally accepted for specific diagnosis in the Diatomaceæ.

THE Romanes Lecture on "The Effect of External Influences upon Development," delivered by Prof. Weismann, at Oxford, last May, and reported in these columns (vol. l. p. 31) has been published in English by the Clarendon Press. The translation has been done by Mr. Gregg Wilson. In the preface, Prof. Weismann adds his tribute to the many that have been paid to the memory of the late Dr. Romanes.

MESSRS. J. AND A. CHURCHILL will shortly publish a new edition of Dr. F. Kohlrausch's indispensable handbook to practical physics—"An Introduction to Physical Measurements." The edition has been translated from the seventh German edition, published in 1892, and it contains nearly four times the number of pages that the first one did in 1869. Mr. T. H. Waller and Mr. H. R. Procter are the translators.

GLACIAL action in Australasia has much attention devoted to it in the *Proceedings* of the Royal Society of Tasmania for 1893. Mr. R. M. Johnston contributes an elaborate review of the evidences of former glaciation in Australasia, with critical observations upon the principal hypotheses which have been advanced to account for glacial epochs generally, and there are several papers on the discovery of glacial action in Tasmania.

IN the current number of *Mind*, Mr. Francis Galton contributes an article on "Discontinuity in Evolution," which should be read by all who are interested in modern biological theory. It owes its origin to the publication of Mr. Bateson's recent work, and contains a summary of the views on discontinuous or "transilent" variation and on "organic stability," which Mr. Galton has published in "Natural Inheritance," in "Finger Prints," and in the preface to a reprint of "Hereditary Genius." The data on which these views are based lie somewhat off the beaten track of biological inquiry, and Mr. Galton's conclusions have not received the consideration due to results based on careful and prolonged observation.

THE Royal Meteorological Institute of the Netherlands has published a new edition of "The Tides on the Dutch Coast," containing, among other useful information, the results of tidal observations made at several stations during recent years. The tables show that on the North Hinder Bank, for instance, the temperature of the air from September to February is lower than that of the sea surface; but from March to August it is higher, and that the prevalence of thunderstorms increases with the latitude. Tide rips are most frequent in the month of April and during the first four days of full and new moon.

THE Meteorological Council have recently issued a second edition of a Barometer Manual for the use of seamen, in which many alterations and improvements have been made. The work contains carefully drawn charts showing the mean atmospheric pressure and prevailing winds for January and July, and also many valuable hints on the management of the barometer. The portions dealing with winds and storms, and especially with practical rules for seamen in tropical cyclones, are of especial value, and this small work of forty pages contains all the necessary information for the safe navigation of a vessel which may be in the vicinity of these storms.

WE have received the *Journal of the Anthropological Institute* for August, containing papers read at meetings of the Institute during the first quarter of this year. Among other papers, we notice one on flint implements of a primitive type from old (pre-glacial) hill-gravels in Berkshire, by Mr. P. A. Shrubsole, and a note on the poisoned arrows of the Akas, by Prof. L. A. Waddell. The Akas are one of the Lohitic tribes of the Asam Valley, occupying independent territory to the north of the Brahmaputra. They poison their arrows for use in warfare, the poison being derived, as has been found in other cases, from the roots of a species of *Aconitum*. A translation of the second part of "Shamanstoo," being Prof. Mikhailovskii's important account of Shamanism in Siberia and European Russia, is contributed by Mr. O. Wardrop.

A THIRD edition, enlarged and partly rewritten, of "Select Methods in Chemical Analysis," by Prof. W. Crookes, F.R.S., has been published by Messrs. Longmans, Green, and Co. During the eight years which elapsed between the publication of the second edition and the preparation of this, various new processes have been introduced, and old ones have either been displaced, or become so well known in ordinary laboratories that their retention in a "select" work, like that of Prof. Crookes', is unnecessary. For it will be remembered that the work is "not intended to provide the student with a complete text-book of analysis, but rather with a laboratory companion, containing information not usually found in ordinary works on analysis." In the present edition, volumetric operations have been almost entirely omitted, and also processes of technical importance. These omissions have made room for the addition of a series of electrical separations, and other processes from Dr. Classen's "Quantitative Chemical Analysis by Electrolysis." As Prof. Crookes only includes in the volume such methods as have been proved in his own laboratory, their practicability is assured. A disadvantage of this eclectic method, however, is that good methods of analysis are passed over because they do not happen to have been personally tested by the author.

THE additions to the Zoological Society's Gardens during the past week include a Black Ape (*Cynopithecus niger*, ♂) from the Celebes, presented by Mr. Gambier Bolton; a Slender Loris (*Loris gracilis*) from Ceylon, presented by Mr. Thos. E. Remington; a Common Chameleon (*Chamæleon vulgaris*) from North Africa, presented by Captain Philip Langdale; four Alpine Newts (*Triton alpestris*), European, presented by Mr. Malcolm O. Smith; four Land Crabs from Jamaica, presented by Mr. Percy Walter Jarvis; a Black-backed Jackal (*Canis mesomelas*) from South Africa, deposited; a Weka Rail (*Ocydromus australis*) from New Zealand, purchased; a Cayenne Lapwing (*Vanellus cayennensis*), bred in the Gardens.

OUR ASTRONOMICAL COLUMN.

RECENT OBSERVATIONS OF MARS.—Mars now rises shortly after nine p.m., and is on the meridian between four and five o'clock in the morning. He will be in opposition on October 20. Two important papers, containing the results of recent observations of the planet, are contributed to the August number of *Astronomy and Astro-Physics*. Mr. Percival Lowell, whose observatory was described in these columns on June 14, began to observe the planet at the end of May, and the observations recorded in his article were made between then and June 24. The clearness of the atmosphere at Flagstaff, Arizona, where the observatory is situated, is responsible for the early date at which it was possible to scrutinise the face of the earth's ruddy brother. And the success with which his features were made out may be judged from the fact that Mr. Lowell recognised a dozen of Schiaparelli's canals two and a half months before the summer solstice of the planet's southern hemisphere. At the beginning of the period of observation, the southern snow-cap was found to have a diameter of about forty-seven degrees; that is, it covered nearly the whole frigid zone. On June 19, the cap measured thirty-nine degrees. Throughout all the period, the outer edge appeared to be perfectly elliptical, indicating that the boundary line of the cap was really a circle. The